



# Asbestos Health Effects Conference An Overview of Key Issues

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**Asbestos Health Effects Conference**  
**Oakland, California**  
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# Purpose of Conference

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- Sound science in asbestos risk assessment
- Revisit key questions on asbestos health effects
  - Identify areas of general agreement
- Begin update of EPA health assessment



# Asbestos-Related Diseases

## *General Consensus*

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- Past occupational exposure to high concentrations of airborne asbestos fibers has been linked to the following diseases:
  - *asbestosis*---diffuse fibrous scarring of the lungs
  - *pleural fibrosis*---fibrous scars lining the space surrounding the lungs
  - *pleural & peritoneal mesothelioma*--- a rare cancer arising from the linings of the lung and abdominal cavity, respectively
  - *lung cancer* --carcinoma of the lung, especially among smokers
- Mesothelioma and pleural abnormalities have been described in household members of asbestos workers and in populations residing in the vicinity of asbestos deposits



# **Asbestos-Related Diseases**

## ***General Consensus (continued)***

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- Health risks from asbestos are dose-dependent
- Cigarette smokers are at greater cancer risk from asbestos
- All asbestos fiber types can cause fibrosis and cancer of the lung and pleura in laboratory animals (mainly rats)
- In animals, long, thin fibers are more carcinogenic and fibrogenic than short, thick fibers
- Long fibers are more biologically active than short fibers (e.g. cytotoxicity, chromosomal aberrations)

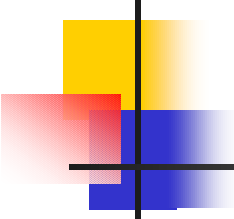


# Asbestos-Related Diseases

## *General Consensus*

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- The capacity of asbestos fibers to cause disease depends on their chemical and physical characteristics, particularly biopersistence, surface chemistry, and fiber dimensions



# Asbestos-Related Diseases

## *Important Questions*

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- What are the specific roles of asbestos physical-chemical factors in carcinogenesis and non-malignant respiratory disease?
- Are different physical and chemical properties important for different health outcomes?
- How should the important chemical and physical properties of fibers be accounted for in asbestos risk assessments?

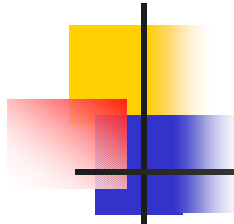


# Mineralogy/Exposure Assessment

## *Key Questions*

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- What physical and mineralogical attributes of fibers should form the basis for categorization?
- Which types and dimensions of fibers are important to enumerate?
- What analytical technique is most appropriate for enumeration of asbestos fibers? How should PCM to TEM counts be converted?
- How is lung-retained fiber best used as a measure of environmental dose?
- How do the terms “asbestiform”, “transitional” and “cleavage fragments” apply



# Epidemiology

## *Key Questions*

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- Can the carcinogenic risks from chrysotile and amphibole exposures be distinguished?
- Are any epidemiological studies particularly relevant for assessing risks of asbestos in soil or other solid media?
- Do epidemiological studies suggest an approach for risk assessment of noncancer outcomes?
- To what extent are studies in Mediterranean countries, New Caledonia, South Africa and Australia relevant for North America?



# Toxicology, pathology, mechanisms

## *Key Questions*

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- What are the specific roles of biopersistence, fiber dimension and surface chemistry in carcinogenesis and nonmalignant respiratory disease?
- Are different physical-chemical properties of fibers important for different health outcomes?
- Which fibers are most important to enumerate?
- How can the results of animal studies best be used in determining risks of asbestos exposure?

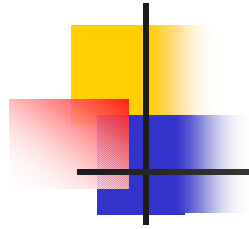


# Risk Assessment

## *Key Questions*

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- Should the principal asbestos types be treated equally for risk assessment?
- What fiber sizes are most critical for risk assessment?
- How should risks of mixed fiber types be evaluated?
- Are sufficient data available for risk assessment of other cancers and non-cancer health endpoints?
- What is the best approach for characterizing risks from episodic exposures?



# Purpose of Conference

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- Sound science in asbestos risk assessment
- Address key questions on asbestos health effects